Art V.—*Contributions to the Palæontology of the Older Tertiary of Victoria.*

Gastropoda.—Part I.

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(With Plates VII. and VIII.).

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In the course of my examination of some of our Older Tertiary shells, I have frequently been met with many difficulties on account of the confusion surrounding some of our described species. It is therefore my intention from time to time to include in these contributions the results of my study upon described species, as well as to include full descriptions of undescribed material. When possible, the new species will be figured, but, failing the issue of plates with the letterpress, I hope the descriptions will be found to serve as a sufficient guide for the recognition of the species.

Lotorium pratti, T. Woods.

The first species I wish to remark upon is that described by the Rev. J. E. T. Woods under the name of Triton prattii. His original description of this species was given in Latin in the Proceedings of the Linnean Society of New South Wales for the year 1878, in a paper "On Some Tertiary Fossils from Muddy Creek, Western Victoria," and may be interpreted as follows:—Shell small, tumidly fusiform, turreted, solid, shining; whorls seven (including two embryonic), convex, girt with unequal spiral liræ, costæ obsolete, somewhat wrinkled, and everywhere closely striatè, striæ minute longitudinally arranged; varices convex, broad, elevated; apex obtuse, nucleus smooth, rapidly increasing, conspicuous; aperture elliptical, dentate within, peristome produced, sharp conspicuous lip; canal prolonged, narrow and recurved.

Length, 9 mm.; breadth, 5 mm.; length of spire, 5 mm. The author in his remarks refers to the analogy of this species to Triton quoyi, Reeve, a common Southern Australian living species, the comparison being certainly a valid one. Also its small size for the genus, its remarkable mouth, "as it is murex like, dentate and almost entire." He further states that "Professor Tate regards this shell as a young *Ranella* belonging to the section in which the varices are not continuous."

This species is figured on Plate XXI., Fig. 15, of the above work, and though the figure is not a good one, it serves to indicate the shell fairly.

I should now like to draw attention to Professor Tate's description of Triton gemmulatus, in Part I. of the Older Tertiary Gastropods, as follows:—"Shell turriculate, with a distorted spire of seven convex whorls, ending in a large blunt apex of two and a half smooth whorls, with a tip very small and rather depressed. Spire whorls (excepting the apical ones) irregularly convex, being ventricose in front of, and nearly flat behind, each varix; ornamented with about 16 unequal liræ, of which there are two prominent ones on the periphery, crossed by about 15 faint intervariceal costulations which bear bead-like granulations at the intersections; the intercostal spaces distantly transversely striated.

"Varices eight, at intervals of about four-fifths of a whorl, stout, broad, crossed by the liræ, and axially striated.

"Last whorl convex, with a rounded base contracted into a short twisted beak; ornamented same as that of the spire, except that the transverse striations cut up the surface of the liræ into small granulations.

"Aperture subrotund, entire; outer lip with an acute crenulated margin, lirate within; inner lip reflected, smooth, with an oblique fold at the front. Length, 13; breadth, 6; length of aperture, 4; of canal, 2."

Professor Tate in his remarks compares the fossil with the recent Triton quoyi, Reeve, and notes the distinguishing characters. His type specimen is from the same locality as T. pratti, T. Woods. Professor Tate's figure 8*a*, *b*, on plate 6, of Gastropoda, Part I., appears to be a somewhat more finely ornamented example than that delineated by T. Woods, as the

costæ are not so well marked, the usual forms showing neat costæ distinctly, while some examples of this species are much more strongly developed in this respect, and at first sight strike one as being a distinct species, but on closer examination, they can only be regarded as varieties. On the whole, most of the representatives from the Eocene beds at Muddy Creek, Western Victoria, are finely ornamented, and more elongate, while in the examples from the Eocene clays of Mornington we note many somewhat shorter and relatively broader, with much coarser spiral threads, and coarser costæ, running into a rarer form with still stronger and as a consequence fewer costæ, and with more angulate whorls, though in the finer ornamentation and other characters of the shell, I think inseparable from the above species. The latter variety without close examination of a good series, might be taken for a new species, but fortunately it has not up to the present been described as such, and I therefore take this opportunity of expressing the opinion that it ought to be included with the present species.

In another place in Professor Tate's above mentioned work in dealing with our common Ranella, which he wrongly identifies as Triton pratti, T. Woods, he states that "Triton prattii was founded on immature specimens of what proves to be a Ranella, belonging to the sub-genus Argobuccinum, characterised by an elevated spire, short beak, and the absence of a posterior canal; and I have thought it needful to describe and figure an adult example."

Even after T. Woods was cognisant of Professor Tate's opinion about the young Ranella, he still adhered to his own opinion that it was a Triton and described it as such. So that in my opinion Professor Tate seems to have been in some way misled into redescribing Triton pratti, T. Woods, under the name of Triton gemmulatus.

The above may best be summarised as follows :—

Lotorium pratti, T. Woods.

1878. Triton prattii, T. Woods. Proc. Lin. Soc. N.S.W., vol. iii., p. 223, pl. 21, f. 15.

1888. Triton gemmulatus, Tate. Trans. Roy. Soc. S.A., vol. x., p. 126, pl. 6, f. 8.

Locality.—Eocene beds of Muddy Creek, Mornington, Lower Moorabool Valley, Gellibrand River, Curlewis, Spring Creek.

The next species that comes under notice as a consequence of the above, should my interpretation of the work of T. Woods be correct, is the very common shell hitherto referred to as Ranella prattii, but which should now have a new name. I therefore propose to call it—

Argobuccinum maccoyi, sp. nov.

1888. Ranella (Argobuccinum) prattii, Tate (non. T. Woods). Trans. Roy. Soc. S.A., vol. x., pp. 115, 116, pl. 6, f. 6.
1889. Argobuccinum pratti, Cossmann. Ann. Geól. Univ., tom. v., p. 1089.
1894. Argobuccinum pratti, Tate. Jour. Roy. Soc. N.S.W., vol. xxvii., p. 172.
1897. Apollo pratti, Harris. B. M. Cat. Aust. Tert. Moll., pp. 195, 196.

Localities.—Muddy Creek, Western Victoria; Mornington Clays; Moorabool Valley; Curlewis; Gellibrand River; River Murray Cliffs near Morgan, South Australia. From deposits of Eocene age at the above localities.

Observations.—As already indicated, Professor Tate regarded this species as representing the adult of Triton pratti, T. Woods, and clearly seeing that the description of T. Woods did not altogether suit this shell, he therefore described and figured the present species, with T. Woods' name erroneously attached, thinking to amplify the previous work.

This species is somewhat variable in many respects, the large coarse form represented by Professor Tate in his Tertiary Gastropoda, Plate VI., Fig. 6, being by no means the commonest or most generally distributed form in Victoria. I believe this is the prevailing form at the Murray River section, South Australia, it also occurs at Muddy Creek, but at most of our localities the prevailing form is finer in ornament, with the tessellated character of the whorls very distinct, the somewhat nodulose costæ of the body-whorl being almost if not entirely absent, while the shells are not of such a robust character, at the same time being relatively more elongate and not so broad.

Dimensions.—The following may serve to show more clearly some of the points I have just indicated.

Length.	Breadth within the Varices.	Length of Aperture.	Length of Canal.
29 mm.	20 mm	9 mm.	7 mm.
26 ,,	9 ,,	6 ,,	6 ,,
25 ,,	10 ,,	6·5 ,,	6 ,,
23 ,,	8 ,,	6 ,,	6 ,,
22 ,,	8 ,,	6 ,,	4.5 ,,
20 ,,	7 ,,	5 ,,	6·5 ,,

The first of the above being the dimensions given by Professor Tate.

Bathytoma rhomboidalis, T. Woods.

1879. Pleurotoma rhomboidalis, T. Woods. Proc. Lin. Soc. N.S.W., vol. iv., p. 10, pl. 2, f. 9.

1892. Dolichotoma atractoides, Tate, m.s., Pritchard. Cat. Tert. Fossils, Ann. Rep. S.A. School of Mines, p. 200.

1893. Dolichotoma angustifrons, Tate and Dennant. Trans. Roy Soc. S.A., vol. xvii., pt. i., p. 221.

1894. Genotia angustifrons, Tate. Jour. Roy. Soc. N.S.W., p. 175, pl. x., figs. 7, 7*a*, 7*b*.

1894. Dolichotoma atractoides, Tate, m.s. (non. G. atractoides, Watson). *Id.*, p. 175.

1897. Bathytoma angustifrons, Harris. B. M. Cat. Aust. Tert. Moll., pp. 49, 50.

Localities.—Muddy Creek; Moorabool Valley; Gellibrand River; Mornington; Bairnsdale; Point Campbell; Lake Connewarre; Newport; Altona Bay; Royal Park (lower beds); Beaumaris (Eocene limestone pebbles). All the above occurrences being of Eocene age.

Observations.—In his original description T. Woods gives fairly full particulars of the young of this species. He was also perfectly aware that he was describing only a young shell, but he regarded his specimen as "sufficiently developed to determine its character." Owing to this his description appears to be somewhat fuller and more careful in detail than usual.

As this is one of our commonest shells, young examples are not particularly rare, and by a careful comparision of these with the original description and figure, there cannot possibly be any doubt as to the species indicated. From the very young examples it is an easy matter to make up the grades to the more ordinary adult forms. Although Professor Tate and Mr. Harris and others have worked with this species they have either been unable to interpret T. Woods' work or have overlooked it, for Professor Tate[1] states that "Pleurotoma rhomboidalis, Tenison Woods, has no specific characters, it represents the tip of a Bathytoma." Mr. Harris in the British Museum Catalogue accepts Professor Tate's description of 1894, but some of his remarks have an interesting and important bearing on my present treatment of this species; he states: "It is interesting to observe also that but few of the main features of the ornament were foreshadowed in the brephic stage, and the extremely diversified character of that ornament as the animal became adult is merely an individual characteristic of no value for systematic purposes. If the shells of a number of very young specimens be compared, no one would have any difficulty in relegating them to a single species; but as they get larger the ornament tends to become so variable that many malacologists would feel inclined to admit the extreme types of variation as of specific rank."

In view of the evidence before us it seems only right to recognise and retain T. Woods' species.

Solutofusus, gen. nov. Pl. VII., Fig. 1, 1*a*, 2.

Shell narrowly elongate, somewhat fragile on account of its thinness. Embryo smooth, consisting of about two and a half contiguous, but rather deeply sutured, whorls, making the apical whorl appear somewhat angulate medially, whorls of about uniform breadth, with a prominently exsert and eccentric tip, the latter standing erect about half as high as the breadth of the embryo, and near the junction with the spire the embryo becomes faintly costulate.

[1] Jour. Roy. Soc. N.S.W., 1898, vol. xxxi., p. 398.

Spire a little more than half the length of the shell, the first spire whorl being in contact with the preceding embryonic whorl, but the succeeding ones becoming more and more unrolled forming a vermetiform spiral round a very slender axis. Posterior spire whorl somewhat strongly costate, but the costæ may become more or less obsolete towards the body whorl. The whole of the spire is adorned with strong spiral threads in the type species, the whorls being convex to an approximately medial angulation.

Aperture small and oval; inner lip enamelled within, very thin, and well defined from the columella, with which it merges only at the extreme anterior end; outer lip also very thin and closing in so close to the columella anteriorly as to appear almost entire, and the long anterior channel shows externally only as an extremely narrow slit, but the end section shows a relatively large internal space which is almost circular. The axis of the shell round which the whorls are coiled is somewhat undulate, hence its extension into the long snout partakes of the same character, and is more or less arched or twisted like a siphonalia. Canal a little more than one-third the length of the shell.

Solutofusus carinatus, sp. nov. Pl. VII., Fig. 1, 1*a*, 2.

Shell thin, very slender, with a smooth embryo of about two and a half whorls, which appear angulate medially with a rather deep and well-defined suture, the eccentric apex is sharp, and exsert for about one-third to one-half of a millimetre; the embryonic whorls are in contact with each other and with the first spire whorl, and though they increase slightly in size towards the spire yet they are of about uniform width, the last half turn becomes slightly costulate as it joins the spire, about two to three costulæ being visible before the more complex ornament appears. The apparent angulation mentioned above may be regarded as a correct description for the apical whorl, but the succeeding whorl being almost flat medially, and the sutural excavation being so deep, it appears doubly keeled, this feature becoming less distinct as the whorl becomes more convex. Spire whorls five, remarkably disjoined, the space between each whorl increasing towards the aperture, and the whorls gradually increasing in diameter, but the latter increase is much less than

that of the intervening space, the ratio being about one to two. Earlier spire whorls costate, the first bearing about seven costæ, which are strongest medially, thinning out towards the posterior suture and also on the anterior slope. The costæ on the succeeding whorls gradually become less distinct till their position is only discernable by a slight angulation of the keel.

Whorls encircled by strong spiral threads about twelve to fourteen in number, two of these being more strongly developed than the remainder, one margining the deeply excavated suture, and thereby making the shell more angular at this region, while the other forms the prominent and characteristic encircling keel.

The spiral threads are broad and flattened, but narrower than the intervening spaces, the latter occasionally but not regularly showing a faint spiral thread or faint spiral striæ. The remaining ornament consists of very fine close-set lines of growth, which are more distinct in the intervening spaces.

Aperture ovate; peristome very thin; inner lip quite distinct from the columella; outer lip undulate, channelled interiorly corresponding to the spiral threads, the latter projecting slightly at the thin edge, the most marked projections being at the end of the sutural and medial keels. Outer lip contracted so closely to the columella as to give the aperture the appearance of being entire, but really opening into a long slender slightly waved canal, the opening of which is contracted to an extremely narrow slit. The threads on the canal are narrower and more angled than those on the spiral whorls.

Dimensions.—Length of shell, 30 mm.; breadth, 7 mm.; breadth of aperture, 2 mm.; length of aperture, 3 mm.; length of canal, 10 mm. The above dimensions are those of the type specimen, but appear to be about the average of the specimens yet obtained, with the exception of the imperfect example figured on the accompanying plate, which is proportionately larger, the breadth of its aperture being 2·5 mm., length of aperture, 3·5 mm., and length of canal, 13·5 mm., the latter being much more waved or bent than in the type.

Locality.—Eocene clays of Balcombe's Bay, Mornington, and Curlewis; also from the Eocene beds of Muddy Creek, Western Victoria.

Murex wallacei, sp. nov. Pl. VII., Fig. 3.

Shell robust, ovately biconic; consisting of six and a half whorls, including one and a half smooth, convex embryonic whorls, the remainder being very perfectly and neatly sculptured.

Varices three, not being very prominent till the third or fourth whorl is reached, but strongly developed on the body whorl, where the shell appears first to have had a thin foliaceous lip extended into a delicate, erect, wing-like expansion, and subsequently the base of this has become considerably thickened by successive laminæ, each of which is distinctly seen as it terminates a little short of the one preceding it, thus completing the anterior aspect of these well-marked varices. Posteriorly each varix partakes of the ordinary sculpture of the whorls. The varices are not regular, but rather strongly sigmoidal. Whorls rather ventricose, with a deeply impressed suture, and bearing about the middle of the intervariceal spaces a somewhat angular nodosity. Ornament on the earlier spire whorls consisting of about three or four strong spiral threads, transversely crossed by fine lamellæ of growth which are most prominent and scaly where they cross the spiral threads, on the succeeding whorls there are a few more spiral threads visible, generally with one or two finer intervening threadlets, till on the body whorl there are about ten strong threads with fine intervening threadlets, and still finer spiral striæ, the whole regularly and closely crossed transversely by growth lamellæ.

Aperture almost quadrate, the upper and outer angle being formed by the well-marked posterior canal, peristome thickly enamelled and distinctly effuse over the body-whorl. Outer lip with a somewhat crinkled edge, and strongly dentate within, bearing about ten or twelve oval denticles which cease at the commencement of the canal; effuse inner lip slightly raised, continuous, and distinct to the canal. Columella slightly bent, and at the posterior end of the canal bearing about three raised denticles, similar to those on the outer lip. Snout broad, umbilicus slight, canal about half closed, though wide and deep, and making but a slight angle with the axis of the shell.

Dimensions.—Length of shell, 30 mm.; breadth of body-whorl between the varices, 20 mm.; breadth, including varices,

28 mm. (slightly imperfect); length of aperture, 10 mm.; breadth of aperture, 7 mm.; length of canal, about 10 mm.

Locality.—Eocene clays of Mornington. Collected by Mr. W. Wallace.

Observations.—This very pretty and distinct species was collected from the Mornington clays by a past geology student of mine, Mr. W. Wallace, of the Department of Mines, Melbourne, and I have therefore much pleasure in associating his name with this shell. Its characters are so very well marked and distinctive, that I do not think it can be easily confused with any of our previously described fossil species.

Voluta fulgetroides, sp. nov. Pl. VII., Fig. 4.

Shell robust, fusiformly oval; spire about one-third the length of the shell, or a little less, terminating in a smooth convex mammillate embryo of one and a half to two obliquely enrolled whorls of moderate size, whose apex is laterally immersed. In addition to the embryonic whorls, there are three or four, generally four, convex whorls, the body-whorl of some specimens being somewhat more tumid and regularly rounded from the suture than others. Suture distinct, somewhat impressed; the whorls are ornamented with very fine close spiral striæ, tending to become obsolete on the body-whorl in most specimens, occasionally several fairly strong spiral threads show on the body-whorl; the lines of growth are well marked and occasionally through their irregularities give rise to slight undulations. This species was to all appearances colour-marked, judging by certain irregular brownish patches, but these are not sufficiently defined in the present specimens to accurately indicate their nature.

Aperture elongate oval, about two-thirds the length of the shell. Inner lip strongly enamelled with a much thickened pad at the posterior end in the adult; columella furnished with three to four strong oblique plaits; outer lip much thickened, this character being most marked medially, becoming thinner anteriorly and posteriorly, and marginally reflected, ascending the penultimate whorl for about one-third its height, and distinctly continuous with and merging into the enamelled inner

lip; a distinctly defined posterior canal can be seen. Anterior canal broad, but relatively shallow, the anterior extremity of the outer lip usually falling short of the columellar extremity by about seven to ten millimetres.

Dimensions.—Length of shell, 118 mm.; breadth, 63 mm.; length of aperture, 88 mm.; breadth of aperture, 22 mm.; breadth of canal, 13 mm.; greatest breadth of embryo, 9 mm.; the above dimensions refer to the type specimen, but much larger examples have been obtained, as may be seen by the following:—Length, 145 mm.; breadth, 77 mm.; length of aperture, 108 mm.; breadth of aperture, 30 mm.; breadth of canal, 20 mm.; greatest breadth of embryo, 10 mm., for the loan of which I am indebted to Mr. W. H. Green.

Locality.—Miocene beds of Muddy Creek, and of Grange Burn, Western Victoria; also from the Miocene deposits of Beaumaris (Mr. J. A. Atkinson).

Observations.—As indicated by the above dimensions, the type is not the largest representative of the species, but is a somewhat short, broad, and slightly more tumid form, with an abnormal peculiarity about the aperture, which can be seen in the accompanying figure. After the shell had apparently assumed its adult form and perfected its outer lip, for some reason or other another growth of shell was commenced, leaving the thickened lip behind as a varix, and though at present the edge of this secondary growth is imperfect through fracture, apparently before preservation, it projects beyond the original lip for about twelve millimetres and is about two millimetres thick at its strongest part, thinning a little anteriorly.

The species to which this shell bears the most striking general resemblance is the living Voluta fulgetrum, Sowerby, of South Australian waters, but from this it may be distinguished by its embryonic characters, the embryo being larger, broader, and obliquely enrolled, and hence the immersed apex is eccentric, further by the absence of the shouldering of the body-whorl, by its well thickened and reflected lip, and by the sutural and other characters.

In some respects the present species appears intermediate between Voluta fulgetrum, Sowerby, and Voluta fusiformis, Swainson, but it does not possess the small embryo and rela-

tively slender spire of the latter species, though the characters of the outer lip are more closely allied, but even here there are distinct differences.

Voluta hamiltonensis, sp. nov. Pl. VIII., Fig. 5.

Shell fusiform, with its spire less than half the length of the shell, capped by a remarkably large smooth mammillate embryo.

Embryo varies in size from about fourteen to ten millimetres in diameter, and from eleven to ten millimetres in height, and has a much swollen appearance, consisting of two obliquely enrolled whorls, their axis of enrolment making an angle of from forty to fifty degrees with the axis of the shell.

Embryonic whorls succeeded by four very slightly convex whorls with an impressed suture, and bearing faint spiral striæ, a few of the striæ tending to become stronger and more thread-like on the anterior slope of the whorls. The spiral ornament is crossed transversely by very fine regular lines of growth, which on the earlier spire whorls are somewhat sigmoid, but soon become backwardly arched to a less degree; in some specimens the lines of growth become so strong and raised as to give rise to narrow liræ. Body whorl somewhat flattened medially on the back. Young shells of this species are much more strongly spirally striate on the rather abrupt anterior slope towards the notch.

Aperture lanceolate; outer lip barely ascending the penultimate whorl where it joins the much thickened and conspicuous enamel pad of the inner lip; outer lip thickened, reaching its maximum in this respect about two-thirds the distance from the suture, and being almost margined within, while without, the margin is distinct. Columella bearing in the young shells three plaits, but adults show some variation by the presence of two additional smaller plaits, one between the anterior and the next above it, and the other forming part of the strong callosity above the posterior one. The colour marking preserved shows that this species bore narrow zig-zag lines of a reddish or brownish colour, parallel to one another, and about five or six millimetres apart.

Dimensions.—Length of shell, 115 mm.; breadth of shell, 45 mm.; length of aperture, 65 mm.; breadth of aperture, 16 mm. Young examples give the following measurements in the above order, 50, 24, 30, 12, and 45, 21, 27, 10.

Locality.—Eocene beds of Muddy Creek, Western Victoria.

Observations.—One remarkably interesting feature about this species is the preservation in one of the adult specimens of the colour marking, which is similar to that so well known on the usual form of Voluta undulata, Lamarck, but differs in not being quite so frequently bent, about two angulations only being noticeable, and in that the lines of colour are much further apart and therefore fewer.

This species might at first sight be taken for Voluta ancilloides, Tate, but when closely examined numerous points of difference arise which seem at present to necessitate the introduction of a distinctive specific name for this shell. Some of the distinguishing points may be summed up as follows: the embryo of the present form is of much more gigantic proportions, and more obliquely enrolled, and the general habit of the shell indicates several points of difference, the whorls are not so ventricose, though the suture is more deeply impressed, and the young shells are much more suddenly contracted to the anterior end, there are also minor differences in the spiral ornament, and in the characters of the thickened lip.

Voluta gatliffi, sp. nov. Pl. VIII., Fig. 6.

Shell ovately fusiform, with prominently angled and strongly costate whorls; the spire, though prominent, is less than half the length of the shell, and is terminated by a mammillate apex, consisting of from one and a half to two smooth swollen whorls. Embryonic whorls obliquely enrolled with a laterally immersed tip, the axis of enrolment making with the axis of the spire-whorls an angle of about forty-five degrees.

In addition to the obliquely enrolled portion, the succeeding half whorl at least, and sometimes a complete whorl, shows embryonic characters, in the earlier portion smooth, or showing lines of growth, then wrinkles, which develop into angulate nodules, and ultimately extending down the whorls into strong,

well-marked angulose ribs. The fine spiral thread-like ornament commencing with the wrinkles.

In addition to the above, there are about three strongly shouldered whorls bearing narrow, oblique, forwardly-directed costæ, the number of which is somewhat variable, ranging from twelve to sixteen or seventeen on posterior whorl, to about fourteen to twenty-two on the body whorl. At the shoulder the costæ are very prominent and abruptly angled, but fade out rapidly before reaching the suture, and at the same time are forwardly directed in conformity with the lines of growth; on the anterior slope of the body-whorl the costæ are slightly forwardly arched, crossing the lines of growth at an acute angle, while, towards the notch they become backwardly arched as they gradually fade out. The concave interspaces between the costæ are usually broader than the costæ, but in the more closely costate forms the spaces are very slightly, if at all, wider than the breadth of the ribs. Earlier whorls closely spirally threaded, tending to become obsolete anteriorly, till on the body-whorl a few threads can sometimes just be detected near the suture.

Aperture ovate, with a somewhat thickened and reflected outer lip, slightly ascending the penultimate whorl, and most strongly effuse or reflected posteriorly, giving the appearance of a small almost wing-like expansion. Columella rather strongly twisted and bearing about its middle three thin oblique plaits. Outer lip falls considerably shorter than the end of the columella; the aperture at the anterior end being relatively very broad and open.

Dimensions.—Length of shell, 69 mm.; breadth of shell, 33 mm.; length of aperture, 44 mm.; breadth of aperture, 15 mm.

Locality.—Eocene beds of Muddy Creek, Western Victoria.

Observations.—This form is very distinct from any of our previously described species of this genus, and it affords me much pleasure to name it after my friend Mr. J. H. Gatliff, in recognition of his long and careful work amongst our living Victorian Mollusca.

Voluta pueblensis, sp. nov. Pl. VIII., Fig. 7.

Shell regularly fusiform, with an acute spire about one-third the length of the shell, terminated by a bluntly convex embryo of about two smooth whorls, which are enrolled in the same plane as the spire whorls, and with a centrally immersed tip.

Succeeding whorls four, the earlier being almost flat, becoming slightly convex, the convexity being most marked where the slight costæ are developed. The costæ consist of slight narrow raised undulations with broad shallow interspaces, the costæ being most prominent about the middle of the whorl, fading out before reaching the posterior suture but reaching to the anterior suture, while on the body whorl they soon thin out on the anterior slope. The costæ number about twelve posteriorly whilst on the body whorl they show a tendency to become obsolete, about ten can usually be counted. Parallel to the costæ there are somewhat coarse lines of growth, and transverse to them spiral threads are distinct on the posterior whorls, but gradually fade out towards the body-whorl where they can only be seen on the upper portion of whorl down to the gradually sloping shoulder.

Aperture narrow elongate, columella slightly twisted and bearing four strong oblique plaits. Outer lip thin and sharp at the edge, not ascending the penultimate whorl. Canal broad and deep.

Dimensions.—Length of shell, 55 mm.; breadth of shell, 19 mm.; length of aperture, 32 mm.; breadth of aperture, 6 mm.

Locality.—Lower horizon of the Eocene beds of Spring Creek, south of Geelong.

Observations.—In some examples of this species the costæ are somewhat more marked than in the figured specimen, and are in the form of acute narrow and more elevated ridges. This species is most closely allied to Voluta sarissa, Tate, which may possibly account for the record of that species in these beds.[1] The present species may however be readily distinguished from Voluta sarissa, Tate, in general habit, by its short spire, its very distinct embryo, several points in its ornament, and general proportions.

All the types of the herein described species are in my own collection.

In conclusion I beg to convey my best thanks to Mr. T. S. Hall, M.A., for the time and care he has been good enough to bestow on the drawings of these shells, for the value of the present paper is much enhanced by the accompanying plates from his drawings.

[1] Trans. Roy. Soc. S.A., 1893, p. 220.

EXPLANATION OF PLATES.

Fig. 1.—Solutofusus carinatus, gen. et., sp. nov. Type. Eocene. Balcombe's Bay, Mornington.

,, 1*a*.—Embryonic whorls of Solutofusus carinatus. Enlarged.

,, 2.—Solutofusus carinatus, gen. et., sp. nov. Larger example, showing some points of variation.

,, 3.—Murex wallacei, sp. nov. Eocene. Mornington.

,, 4.—Voluto fulgetroides, sp. nov. Miocene. Muddy Creek.

,, 5.—Voluta hamiltonensis, sp. nov. Eocene. Muddy Creek.

,, 6.—Voluta gatliffi, sp. nov. Eocene. Muddy Creek.

,, 7.—Voluta pueblensis, sp. nov. Eocene. Muddy Creek.